December 11, 1998

FOR: The Commissioners

FROM: William D. Travers /s/
Executive Director for Operations

SUBJECT: STATUS REPORT ON THE CONTINUING RECOVERY OF MILLSTONE NUCLEAR POWER STATION

PURPOSE:

To provide the Commission with (1) a periodic summary of ongoing activities related to the Restart Assessment Plan (RAP) for the Millstone Nuclear Power Station, Unit 2 and (2) an update of Millstone Unit 3 performance since restart. The summary of ongoing activities provides a status of the major elements that require resolution before plant restart. These include the NRC's oversight of the Independent Corrective Action Verification Program (ICAVP), corrective action program implementation at Millstone Unit 2, an assessment of licensing issues for restart, and work planning and control improvements. The staff's assessment of Northeast Utilities' (the licensee's) progress in establishing a safety-conscious work environment (SCWE) and an effective employee concerns program (ECP) will be presented in another Commission paper to be issued shortly.

BACKGROUND:

The staff has been in frequent contact with the Commission through various Commission papers and status reports over the past 2 years since Millstone Station was designated as a "watch list" Category 3 facility in June 1996. The Commission also received briefings from the staff, the licensee, pertinent contract organizations involved in oversight activities, members of the public, and State and local officials on approximately a quarterly basis beginning in January 1997 through June 1998. Although most of these briefings focused on the status and restart readiness of Millstone Unit 3, information on the Millstone Unit 2 ICAVP and on restart activities at Millstone Unit 2 has usually been provided.

SECY-98-090, "Selected Issues Related to Recovery of Millstone Nuclear Power Station Unit 3," reported to the Commission on the staff's assessment of the licensee's progress to establish an SCWE and an effective ECP, as well as the staff's recommendation that the licensee had made appropriate improvements to support restart of Millstone Unit 3. The staff made similar recommendations regarding the licensee's efforts to improve its oversight and quality assurance functions, as well as its program for managing the backlog of work at Millstone Unit 3.

SECY-98-119, "Remaining Issues Related to Recovery of Millstone Nuclear Power Station, Unit 3," reported to the Commission on (1) the staff's assessment of the remaining issues related to the RAP for Millstone Unit 3 and (2) the staff's recommendation regarding authorization for Millstone Unit 3 restart. In Staff Requirements Memorandum (SRM) 98-119 dated June 15, 1998, the Commission concurred with the NRC staff's conclusion that the licensee had taken appropriate corrective actions to support the restart of Millstone Unit 3. The Commission, therefore, approved the staff's proposal to change the watch list status of Millstone Unit 3 from a Category 3 to a Category 2 plant; authorized the restart of Millstone Unit 3, subject to satisfactory completion of all remaining issues requiring NRC verification; and designated the Executive Director for Operations (EDO) as the senior manager responsible for verifying that the appropriate aspects of NRC Inspection Manual Chapter (MC) 0350 , "Staff Guidelines for Restart Authorization," were completed and for approving commencement of actions to restart Millstone Unit 3. By letter dated June 29, 1998, the EDO authorized the licensee to commence activities to restart Millstone Unit 3. Millstone Unit 3 has been operating satisfactorily since its startup in July 1998 and the staff's assessment of its performance is discussed below.

DISCUSSION:

In an SRM dated May 7, 1997, the Commission directed the staff to send to the Commission - before each quarterly meeting with the Commission - a written summary of the ongoing activities in the RAP, including but not limited to the status of NRC oversight of the ICAVP, an assessment of licensing issues required for restart, a summary of significant inspection activities and results, and an updated project planning schedule. The Commission has not met since June 2, 1998; therefore, the staff found it appropriate to give the Commission a status report at this time.

The staff has identified several major elements in the RAP that require resolution before Millstone Unit 2 restart. These elements include corrective action program improvements (as implemented at Millstone Unit 2), work planning and control improvements, procedure upgrade programs, and quality assurance and management oversight improvements. The RAP also covers staff activities to evaluate the completion of the ICAVP and the licensee's response to NRC's 10 CFR 50.54(f) letters regarding Millstone Unit 2. The actions listed in the generic MC 0350 restart checklist that are applicable to Millstone Unit 2, such as those regarding management effectiveness and self-assessment capability, are also covered in the RAP. The RAP provides for the conduct of an Operational Safety Team Inspection (OSTI) and an NRC Inspection Manual Inspection Procedure (IP) 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems," inspection, which are normally carried out to assess the overall readiness of a plant for restart after a prolonged shutdown. Attachment 1 summarizes the status of the major elements of the RAP. Attachment 2 is the latest version (Revision 6) of the Millstone Unit 2 RAP.

STATUS OF MILLSTONE UNIT 2 AND 3:

Millstone Unit 2 fuel has been removed from the reactor and is being stored in the spent fuel pool. Core reload, originally scheduled by the licensee for August 1998, has been delayed to January 1999. The delay in loading fuel has been caused by the additional time needed by the licensee to complete certain maintenance activities, such as electrical breaker maintenance, fire seal inspections, and emergent work (e.g., cable separation and ampacity issues, equipment qualification). The licensee's current schedule indicates that it intends to have Millstone Unit 2 enter Mode 4 (Hot Shutdown) on

February 18, 1999, and enter Mode 2 (Startup) on March 24, 1999. It should be noted that previous experience has shown that for plants starting up after a prolonged outage, the time between entering Mode 4 and being ready to enter Mode 2 is marked by emerging technical and equipment issues. This time period is also when the NRC conducts its major inspection efforts associated with restart readiness (e.g., OSTI). After completing these inspections, the staff will conduct its final RAP review in preparation for a Commission meeting to consider restart authorization for Millstone Unit 2. The licensee's current overall Millstone Unit 2 schedule, as well as the staff's project planning schedule, is provided in Attachment 3.

Overall, the performance of Millstone Unit 3, since its restart in July 1998, has been acceptable and typical of a plant returning to service after a shutdown in excess of 2 years. Some equipment problems (largely in the balance of plant) have impacted operations. Licensee self-assessments and the NRC inspection program indicate problems still exist in the areas of work control, engineering backlogs, operator staffing, and control of plant configuration. Several operational events (including a forced outage to repair a leaking auxiliary feedwater valve, two manual reactor trips as a result of secondary water chemistry problems, another manual trip due to reduced condenser vacuum, and a number of power reductions to address secondary system problems and several technical specification compliance issues) have caused licensee management to initiate a collective assessment of the number and severity of operational challenges facing the plant staff. The plant operators have responded well to the challenges with evidence of conservative decision-making and deliberate efforts to ensure compliance with procedural requirements. Management has recognized the need to strengthen performance in problem areas and ensure that progress at the station is sustained. Attachment 4 is an overall summary of performance at Millstone Unit 3, including the licensee's efforts at reducing the work backlog.

The licensee has commenced a reorganization that will effectively reduce the total number of managers from the director level to first-line supervisors by 50 percent. This reorganization will create a "station" versus a "unit" organization structure. Additionally, key positions that have been vacant or held for several years by contractors, such as the unit directors, are being staffed with Northeast Utilities employees. This reorganization will require extensive senior management involvement over the next several months. The reorganization, which will be implemented in stages, will be closely followed by the staff.

The transition of the NRC oversight organization from the Special Projects Office to a more normal alignment, with the focal point for restart residing with the Region I Regional Administrator, is complete. Regional senior management have conducted several site visits to review plant status and assess progress being made. Meetings were held with the licensee and public citizens to announce the transition and introduce the new management team.

CONCLUSION:

The staff finds that the licensee is progressing in its various activities to effect needed improvements at Millstone Unit 2. Although progress has not kept pace with the licensee's initial schedules, improvements in essentially all elements of the NRC's RAP for Millstone Unit 2 are being identified. This progress notwithstanding, the NRC staff's most important assessments of the licensee's readiness for restart have not yet taken place. These assessments are necessarily focused on the latter stages of the licensee's improvement program. A number of significant inspection activities (e.g., OSTI, IP 40500, and ICAVP-related corrective action effectiveness) will be initiated following the licensee's own readiness determination. These inspections and the staff's remaining evaluations of the issues identified in the Millstone Unit 2 RAP will ultimately form the bases for a staff restart recommendation to the Commission.

The staff is continuing to plan and carry out its inspection and licensing activities. This will require extensive coordination with the licensee's schedules and continual assessment of the licensee's progress. Given that the licensee's schedule for restart currently shows the transition to Mode 4 in February and Mode 2 in March 1999, the staff believes it would be appropriate to conduct a Commission briefing in the near future to discuss Millstone Unit 2 status and progress.

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Attachments:
1. Status of Major Elements of the Millstone Unit 2 RAP
2. Millstone Unit 2 RAP, Revision 6 [The letter at this link was not included as part of the SECY paper attachment]
3. Millstone Unit 2 Licensee's Restart Milestones and NRC's Project Planning Schedule
4. Millstone Unit 3 Post-Restart Performance Assessment

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ATTACHMENT 1

STATUS OF MAJOR ELEMENTS OF THE MILLSTONE UNIT 2 RESTART ASSESSMENT PLAN

- Manual Chapter 0350 and Restart Assessment Plan
- Independent Corrective Action Verification Program
- Licensing Issues
- 10 CFR 50.54(f) Activities (Deferred Items)

- Corrective Action Program
- Oversight
- Work Planning and Controls
- Procedure Upgrade Program

ISSUE:
MANUAL CHAPTER 0350 AND RESTART ASSESSMENT PLAN
DISCUSSION:

As part of its execution of NRC Inspection Manual Chapter (MC) 0350, "Staff Guidelines for Restart Approval," the staff developed a Restart Assessment Plan (RAP) for Millstone Unit 2. The RAP was developed to cover all the expected NRC actions required before the NRC approves plant restart. The staff developed an RAP for each Millstone unit to incorporate the appropriate aspects of MC 0350 and to address site-specific and unit-specific issues. One of the elements of the RAP is the significant items list (SIL). The SIL contains items that the NRC is using to audit and evaluate licensee programs and other significant safety and regulatory issues. When the licensee has completed actions associated with a particular item on the SIL, it gives a package to the staff. The staff then reviews the package and performs any needed inspection activities before closing out the issue.

Because of the licensee's attention to the restart of Millstone Unit 3, until recently, few licensee and NRC resources have been devoted to Millstone Unit 2. The licensee placed most of its emphasis on executing the Configuration Management Program (CMP) vice Millstone Unit 2 restart readiness. The licensee has been slow in correcting items identified on the Millstone Unit 2 SIL, limiting the number of SIL packages that have been submitted for NRC review.

NRC ACTION:

Closure of the MC 0350 checklist is in its early stages. Most checklist items concerning licensee readiness are still open because of plant status. Closure of many MC 0350 items depends on the licensee achieving physical plant readiness for Mode 4 and Mode 2, and on the results of future NRC inspections. These inspections include the Independent Corrective Action Verification Program (ICAVP) inspections, the Operational Safety Team Inspection (OSTI), and the NRC Inspection Manual Inspection Procedure (IP) 40500 , "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems." The OSTI and IP 40500 inspections have been tentatively scheduled for early 1999.

STATUS:

The Millstone Unit 2 SIL currently consists of 54 line items, which the licensee has stated will require 75 separate packages for closure. The NRC has received 47 closure packages from the licensee. As of November 13, 1998, 30 SIL packages have been closed by the NRC. On the licensee's current schedule, all the SIL packages will be submitted to the NRC by March 18, 1999.

ISSUE:

INDEPENDENT CORRECTIVE ACTION VERIFICATION PROGRAM
DISCUSSION:

On August 14, 1996, the NRC issued a confirmatory order establishing an ICAVP. This program, independently carried out by a contractor approved by the NRC, is intended to verify the adequacy of Northeast Nuclear Energy Company's (NNECO's) efforts to establish adequate design bases and design controls (i.e., translate the design bases into operating procedures and maintenance and testing practices, verify system performance, and verify implementation of modifications made since issuance of the initial facility operating licenses). The ICAVP is intended to provide additional assurance, before unit restart, that the licensee has identified and corrected existing problems in the design and configuration control processes. It uses a three-tiered approach, as described in SECY-97-003, "Millstone Restart Review Process," dated January 3, 1997, to evaluate a sample of the licensee's activities. The NRC's oversight of the ICAVP is one of the many activities that make up the RAP. The results from this program will be a major factor in whether the NRC recommends restart.

NNECO has implemented its CMP, which was developed to confirm that the future operation of Millstone Unit 2 will be conducted in accordance with the terms and conditions of its operating license, the Millstone Unit 2 Final Safety Analysis Report (FSAR), and NRC regulations. The CMP included a review of the licensing and design bases requirements for the 63 Millstone Unit 2 systems that the licensee has categorized through implementation of the maintenance rule as either Group 1 (safety-related and risk-significant) or Group 2 (safety-related or risk-significant). After NNECO completed its problem identification for half the Millstone Unit 2 Group 1 systems (June 30, 1997), the ICAVP contractor began the ICAVP review. NNECO completed the problem identification phase of the CMP for Millstone Unit 2 on September 15, 1997.

NRC ACTION:

The staff's oversight objectives are to ensure that the review by the ICAVP contractor is independent of the licensee and its design contractors, is performed by qualified individuals, and is comprehensive, incorporating appropriate engineering discipline and operational reviews. In accordance with the confirmatory order, the NRC reviewed and approved the proposed ICAVP contractor for Millstone Unit 2 and approved the contractor's ICAVP audit plan. The staff selected the specific systems to be evaluated in the ICAVP, with input from the Connecticut Nuclear Energy Advisory Council (NEAC). The NEAC selected two of the systems to be reviewed by the ICAVP contractor for Millstone Unit 2 from a list of systems identified by the NRC. Key design aspects of many of the systems being evaluated by NNECO will be assessed in the ICAVP; four systems were examined in detail by the contractor. The scope of the ICAVP will be broadened if significant issues are identified in the assessment of NNECO's corrective actions.

In overseeing the ICAVP and the ICAVP contractor, the staff performs its own independent inspections. Six separate inspections of licensee and ICAVP contractor activities were planned: an ICAVP implementation inspection, two independent vertical-slice inspections of at least two systems at Millstone Unit 2 (one within the scope of the ICAVP and one outside the scope), an inspection of change processes used at the site, a functional inspection of accident mitigation systems relied on to mitigate the consequences of two accidents analyzed in the FSAR, and an inspection of the corrective actions implemented as a result of findings made during NNECO's CMP, the ICAVP, and NRC ICAVP oversight inspections. The staff will also evaluate the final results of the ICAVP contractor's audit and assessment of the licensee's corrective actions. The staff's oversight plans are described in detail in SECY-97-003.

STATUS:

As previously noted in SECY-97-283, "Recovery of Millstone Nuclear Power Station," dated December 4, 1997, the staff approved Parsons Power Group Inc. (Parsons) as the ICAVP contractor for Millstone Unit 2 on May 28, 1997. On July 1, 1997, after the problem identification phase had been completed for half the Group 1 maintenance rule systems, the staff selected the high-pressure safety injection system including the refueling water storage tank and the auxiliary feedwater (AFW) system, and the condensate storage tank as the first two systems to be inspected for the Millstone Unit 2 ICAVP. NNECO declared the problem identification phase of the CMP completed on September 15, 1997. On September 18, 1997, NEAC selected the emergency diesel generator (EDG) and support systems (comprising five maintenance rule systems) and the radiological release control system (comprising two maintenance rule systems) as the next two systems to be reviewed during the Millstone Unit 2 ICAVP. With the selection by NEAC of these systems, a total of 11 maintenance rule Group 1 or Group 2 systems were included within the scope of the Millstone Unit 2 ICAVP.

As of November 11, 1998, having issued 811 preliminary discrepancy reports (DRs) (762 valid and 49 invalid), Parsons has essentially completed its discovery phase. Of the valid DRs issued to date, 648 DRs have been closed, with 59 as confirmed Level 3 DRs, 451 as confirmed Level 4 DRs, 90 as nondiscrepant, and 48 as previously identified. The closure rate of the DRs has improved as NNECO and Parsons have focused more resources on DR review and closure. At the current rate of closure, the staff anticipates that NNECO and Parsons will reach agreement on the issues and the significance levels for the remaining Millstone Unit 2 DRs within the next several weeks.

The staff has completed five of the six-planned ICAVP oversight inspection activities: (1) the ICAVP implementation inspection (Inspection Report (IR) 50-336/97-211), completed on December 12, 1997 (early evaluation of Parsons' implementation of the ICAVP audit plan); (2) the Tier 1 out-of-scope safety system functional inspection (SSFI) (IR 50-336/98-202), completed April 4, 1998, of the reactor building closed cooling water (RBCCW) system and associated portions of the service water system (SWS) and electrical systems; (3) the Tier 3 design change process inspection (IR 50-336/98-201), completed May 15, 1998; (4) the Tier 2 accident mitigation system inspection (IR 50-336/98-213), completed September 11, 1998, of the main steamline break (MSLB) and small-break loss-of-coolant accident (SBLOCA) as analyzed in Chapter 14 of the Millstone Unit 2 FSAR; and (5) the Tier 1 inscope SSFI (IR 50-336/98-203), completed October 2, 1998, of the AFW. The only ICAVP oversight inspection activity that remains to be completed is the review of the corrective actions implemented by NNECO in response to issues identified during the CMP, the ICAVP, and NRC ICAVP oversight inspections. The staff currently plans to do the corrective action inspection in two phases: the first phase in early December 1998 and the second phase in early February 1999. This schedule is contingent on the licensee's ability to complete the corrective actions for items identified in the NRC ICAVP inspections and Parsons' confirmed Level 3 DRs.

During the ICAVP implementation inspection, the staff determined that Parsons was adhering to the NRC-approved ICAVP audit plan in its implementation of the ICAVP at Millstone Unit 2. Parsons took appropriate actions to address minor issues that were identified.

During the Tier 1 out-of-scope SSFI, the staff observed that before its selection of RBCCW as the out-of-scope system on September 19, 1997, NNECO had already identified and resolved many important RBCCW design vulnerabilities. Although violations were identified during this inspection that were considered to be equivalent to ICAVP Significance Level 3 issues (conditions outside the design or licensing bases that did not affect the ability of a system to perform its safety-related functions), the inspection team concluded that, overall, NNECO had adequately assessed the RBCCW system's capability to perform its safety functions, its conformance to its design and licensing bases, and its operational compliance with the FSAR and Millstone Unit 2 Technical Specifications (TS).

In assessing NNECO's configuration control and change processes, the staff concluded, on the basis of the results of the Tier 3 design change process inspection, that the implementation of the existing Millstone Unit 2 change processes and procedures met the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance," and should be adequate to maintain the Millstone Unit 2 design and licensing bases. Further, the staff concluded that the Parsons Tier 3 ICAVP review was conducted in accordance with the NRC-approved audit plan and project procedures and that the reviews were thorough and critical. Generally, the NRC team's findings during this inspection were consistent with Parsons' ICAVP findings. An area that both the staff and Parsons determined that required additional attention from NNECO was establishing the threshold for performing safety evaluations in accordance with 10 CFR 50.59.

The NRC Tier 2 team inspection focused on a functional review of the systems involved in the mitigation of two accident scenarios: the MSLB and the SBLOCA. On the basis of the results of the Tier 2 accident mitigation systems inspection, the staff concluded that the accidents analyzed in Chapter 14 of the FSAR appeared consistent with those used in the design of the mitigation systems and that the accident analyses should be adequate to maintain the Millstone Unit 2 design and licensing bases. The team found that Parsons' ICAVP Tier 2 reviews were generally conducted in accordance with the NRC-approved ICAVP audit plan and project procedures and that the reviews were conducted in a thorough, detailed, and critical manner. Generally, the team's findings were consistent with Parsons' ICAVP findings. The team identified several instances in which the licensee failed to translate design-basis requirements into plant procedures. An example was the failure to include a prohibition, assumed in the MSLB accident analysis, for using the feedwater-regulating bypass valves above 25 percent power in the operating procedure for the feedwater system.

The final Tier 1 SSFI was conducted on portions of two systems within the scope of the ICAVP (the AFW system and the EDG sequencer). As a result of

this inspection, the staff found that, overall, the breadth and depth of the Parsons review was in accordance with the NRC-approved ICAVP audit plan. Although the team identified issues not discovered by the CMP or by Parsons, the safety significance of the findings was low. On the basis of the results of the team's independent design review and the team's assessment of Parsons' implementation of Tier 1, the staff concluded that NNECO's CMP was generally effective in identifying and correcting nonconformances with the plant's design and licensing bases. The only exception noted during this inspection was the licensee's failure to identify, during its CMP, that it had not properly evaluated a Technical Requirements Manual (TRM) TS clarification that would have allowed isolation of the single flow path for AFW to one of the two steam generators (SGs) for 72 hours. This was not identified by Parsons during the ICAVP. Both the licensee and Parsons have expanded their reviews of the TRM. This TRM error and the issues identified during the Tier 2 inspection are indicative of a weakness in the configuration control process in the translation of accident analyses inputs to plant procedures. NNECO recognizes this weakness and is evaluating possible corrective actions. Parsons also identified this process weakness during its ICAVP review. The additional reviews of the TRM have been completed by the licensee and Parsons. Parsons' review was confined to the portions of the TRM that address Tier 1 systems. Parsons did not identify any other issues. The licensee's review of the TRM identified a similar concern with new fuel handling, which the licensee is addressing.

In addition to the inspection activities, the staff continues to conduct its routine oversight activities: participating in several publicly observable meetings between the licensee and Parsons to discuss the status of the ICAVP, meetings to resolve specific DRs, and daily teleconferences between Parsons and the licensee, and reviewing the licensee's submittal on two preliminary Level 1 DRs for which Parsons and the licensee could not agree.

One of the DRs involved the possibility of water leakage into the underground nonsafety-related EDG fuel oil storage tank, resulting in loss of function of both diesel generators. The other DR identified a lack of redundancy in the ventilation dampers that isolate the enclosure building purge system after a postulated LOCA. In the first case, the staff found that the plant was in conformance with its licensing basis and, therefore, the issue was not a Level 1 DR. However, the licensee voluntarily made procedural changes that prohibit automatic fuel oil transfer to the safety-related day tanks during adverse weather conditions. This procedure change eliminated the concern. The staff is reviewing the second potential Level 1 DR.

The staff has taken a more active role in facilitating the discussions during the teleconferences between the licensee and Parsons. The staff continues to review and approve changes to Parsons' ICAVP audit plan and implementing procedures and to interview new staff added by Parsons to implement the ICAVP.

The staff has implemented several changes to the ICAVP process for Millstone Unit 2 to take advantage of lessons learned during the Millstone Unit 3 ICAVP. The most significant change made at Millstone Unit 2 was to have Parsons use a sampling approach to review the corrective actions taken by NNECO during the ICAVP. Parsons' will review corrective actions to resolve issues identified by NNECO during the CMP and confirmed DRs issued by Parsons. On October 21, 1998, the staff informed NNECO and Parsons of the sample of corrective actions identified by NNECO during the CMP to be included within the scope of the ICAVP and the criteria for expanding the scope of Parsons' review in this area.

ISSUE:

LICENSING ISSUES
DISCUSSION:

The licensee plans to submit or has submitted licensing issues (amendments, unreviewed safety questions (USQs), relief requests, etc.) that will need to be reviewed before restart.

NRC ACTION:

The staff will process and review licensing actions as the licensee identifies and submits them. The staff will follow the normal processes for these reviews.

STATUS:

On the basis of the licensee's review of existing license amendment requests and an in-depth review of the Millstone Unit 2 TS, the licensee has identified a number of licensing issues that require resolution before restart.

As of November 13, 1998, the licensee had identified 48 licensing issues that require NRC staff review before restart. Of the 48 licensing actions, 27 have been completed (11 TS amendments, 3 TS withdrawals, 1 license amendment resolving a USQ, 2 issues the licensee ultimately determined did not need to be submitted after discussions with the technical staff, and 10 other licensing activities). Of the remaining 21 licensing actions, 16 have been submitted and are currently under staff review (8 TS amendments, 4 USQs, 3 other licensing actions, and 1 exemption). The remaining five licensing actions (all of them USQs) are scheduled to be submitted in December 1998, except for a USQ associated with cable raceway separation, which is scheduled to be submitted in early January 1999. It is possible that additional licensing issues will emerge as the licensee continues its effort to resolve licensing and design bases issues.

The amendments submitted to date and the staff's projected review schedule do not appear to affect the licensee's ability to restart on its current schedule. However, the staff has asked for additional information on several license amendment requests, lengthening the review process. Late submittals or newly emerging issues, which require extensive staff review, may slow the licensee's projected schedule.

ISSUE:

10 CFR 50.54(F) ACTIVITIES (DEFERRED ITEMS)
DISCUSSION:

On December 13, 1995, the NRC sent a letter to Northeast Utilities (NU), requesting NU, pursuant to 10 CFR 50.54(f), to provide information describing actions taken to ensure that future operations of Millstone Unit 1 will be conducted in accordance with the terms and conditions of the Millstone Unit 1 operating license, the Commission's regulations, including 10 CFR 50.59, and the Millstone Unit 1 Updated Final Safety Analysis Report. Similar letters were sent to NU for Millstone Unit 2 on March 7, 1996, and for Millstone Unit 3 on April 4, 1996.

On April 16, 1997, the NRC sent a letter to NU requesting information pursuant to 10 CFR 50.54(f) (superseding previous letters requesting information pursuant to 10 CFR 50.54(f)). The April 16, 1997, letter asked the licensee to provide information on (1) the significant items that needed to be done before restart, (2) items to be deferred until after restart, (3) NU's process and rationale for deferring items until after restart, and (4) actions taken to ensure that future operation of the unit(s) will be conducted in accordance with the license, regulations, and the FSAR.

In accordance with the requests made in the April 16, 1997, 10 CFR 50.54(f) letter, the licensee has responded to the first three items, most recently to items 1 and 2, submitted on September 24, 1998. The licensee had previously used four criteria (item (3)) for deciding whether an item affected restart: (1) whether it implemented or supported a change to plant TS; (2) whether it corrected a licensing or design-basis deficiency; (3) whether it accomplished a restart license commitment, or (4) whether it resolved an operability concern about a maintenance rule Group 1 or 2 system. The licensee has committed to describe its actions taken to ensure that future operation of Millstone Unit 2 will be conducted in accordance with the license, regulations, and FSAR and send its description to the Commission approximately 30 days before the Commission meeting on restart.

NRC ACTION:

In October 1997, the NRC staff reviewed the licensee's October 21, 1997, submittal. The inspectors found that the decision-making process for deferring items was conservative and the items on the deferred issues list would not affect safe plant operation. The licensee was generally able to justify the items on the deferred issues list. Only two items were moved to the restart list as a result of the inspections.

The inspectors also noted that the licensee's process for developing the list had been improved to correct the completeness and accuracy problems that were identified during a previous NRC review of the Millstone Unit 3 deferred issues list (NRC IR 50-423/97-202). The Nuclear Oversight Department was more involved and the Plant Operation Review Committee at Millstone Unit 2 did a line-by-line review of the items on the list as part of the review and approval process.

The inspectors concluded that the items on the deffered issues list were appropriate for deferral and, overall, the list reflected a conservative decision-making process. The inspectors did not identify any issues that, if not corrected before plant restart, would have resulted in a significant safety concern during plant operations.

STATUS:

The NRC plans to inspect the Millstone Unit 2 deferred issues list again in late 1998, looking at items added to the list since the last inspection of the Millstone Unit 2 list in October 1997. The staff also plans to inspect the Millstone Unit 2 deferred issues list closer to restart.

ISSUE:

CORRECTIVE ACTION PROGRAM
DISCUSSION:

Previous licensee self-assessments and NRC inspections had found that NNECO's corrective action program had been historically weak in identifying problems and ineffective in ensuring comprehensive and effective corrective actions. In many instances, narrowly focused corrective actions had failed to encompass all aspects of the underlying problem. Additionally, the licensee often did not follow up on corrective actions to ensure they were effective. A correlation also existed between the ineffectiveness of the corrective action program and the issues related to the handling of employee safety concerns and the safety-conscious work environment (SCWE) at Millstone. An important element in an effective corrective action program is encouraging workers to raise issues willingly without fear of retribution or retaliation. Consequently, the RAP made the licensee's corrective action program an important issue.

NNECO initiated efforts in early 1997 to improve the corrective action program by adopting industry standards and processes and formalizing them in its procedure Reports (RP) 4, "Corrective Action Program." The improvements included a lower threshold for reportable problems, more management emphasis on the need for employees to identify problems, more management involvement in the process, prompt processing of operability determinations, development of performance indicators, root-cause analysis training, and enhanced tracking and trending programs.

NRC ACTION:

To verify the licensee's actions, supplementing the day-to-day observations and interactions of the resident inspectors, the NRC performed a number of multipurpose inspections to assess the effectiveness of the process. The NRC performed a team inspection using IP 40500. The NRC did an inspection of the effectiveness and the appropriateness of the licensee's corrective actions for design concerns raised by the NRC in its ICAVP-related inspections, the licensee in its CMP, and Sargent and Lundy in its ICAVP. An OSTI was performed at Millstone Unit 3, which audited parts of the corrective action process. In the context of the OSTI, the NRC staff reviewed the licensee's corrective action program and subordinate procedures, audit reports developed by NNECO's Nuclear Oversight organization, the licensee's Independent Review Team Report on the Effectiveness of Corrective Actions, the NRC IP 40500 inspection team report, and outstanding corrective action items.

The NRC also gained insights into the effectiveness of the corrective action program by assessing the licensee's implementation of the employee

concerns program (ECP) and its efforts to establish an SCWE. Integral to the staff's evaluation of Millstone SCWE activities was its assessment of the licensee's programs for resolving safety issues raised in the line organization. Staff observations and interviews showed that managers and supervisors encouraged employees to identify problems. These observations and findings were consistent with those of Little Harbor Consultants, Inc. (LHC), the third-party organization approved by an NRC order to oversee the licensee's implementation of the SCWE program. LHC also assessed NNECO's corrective action program and found the program and its implementation acceptable.

The foregoing inspections revealed that an appropriately low threshold exists at Millstone Unit 3 for identifying conditions adverse to quality. NNECO management had effectively communicated new standards to the working staff so that problems would be identified and referred to the corrective action program for resolution. Although the emphasis of these inspections has been on the Millstone Unit 3 implementation of the corrective action program, much of the licensee's program applies to Millstone Unit 2 because it is a site process.

On the basis of the NRC inspections, SECY-98-090 concluded that the licensee's implementation of the corrective action program was adequate for Millstone Unit 3 and would support the restart of Millstone Unit 3. Although the staff found that the licensee's corrective action program was adequate to support the restart of Millstone Unit 3, the staff wants to look at the long-term performance. Historically, the licensee has had problems in maintaining an effective corrective action program. The staff committed to assess the effectiveness of the corrective action program at Millstone Unit 3 approximately 1 year after plant restart. This inspection may be combined with the staff's inspection of the implementation of the corrective action program at Millstone Unit 2, depending on the pace of the recovery of Millstone Unit 2.

STATUS:

The routine inspections performed to close the SIL issues assess the licensee's corrective action program on an ongoing basis and will provide much of the staff's overall assessment of the corrective action program. Additionally, the IP 40500, ICAVP corrective action, and OSTI inspections will be performed for Millstone Unit 2 and will independently provide insights into the effectiveness of the implementation of the corrective action program at Millstone Unit 2. These inspections will form the basis for the staff's decision on whether the implementation of the corrective action program at Millstone Unit 2 supports restart.

ISSUE:

OVERSIGHT
DISCUSSION:

In 1996, through self-assessments and external and internal audits, the licensee identified its oversight function as deficient and as a contributing factor in its declining performance. The root-cause evaluation in *Effectiveness of Oversight Organization* by the Yankee Atomic Electric Company, dated September 10, 1996, examined the failure of Quality Assessment Services, the Independent Safety Evaluation Group (ISEG) and the Nuclear Review Board (NRB) to identify the deficient FSAR control process and the degraded radioactive waste conditions, predominantly in Millstone Unit 1. The licensee found that management did not adequately support the ISEG and the NRB.

On July 22, 1996, the Nuclear Committee Advisory Team sent a report to the Nuclear Committee of the Northeast Utilities Board of Trustees that forwarded previous report findings by the Fundamental Cause Assessment Team. As the report noted, "Senior executives at Northeast Utilities, from the CEO [Chief Executive Officer] to senior nuclear site executives, were ineffective over a number of years in providing vision, direction, and leadership necessary for the management of the NU nuclear power program.... Key performance issues, such as an effective corrective action program,...critical self evaluation processes were not fully appreciated by senior management even after they were identified by outside industry and regulatory agencies."

The Systematic Assessment of Licensee Performance evaluations for the period December 1990 to July 1994 twice judged the Safety Assessment and Quality Verification area to be Category 3. Weak self-assessments and ineffective independent oversight contributed to the low level of performance.

In addition, the Joint Utilities Management Assessment (JUMA) issued a critical report following its 1996 review, which concluded that the quality assurance (QA) program had not been effective in resolving identified problems, including those documented in previous QA internal and external assessments. A subsequent JUMA, which completed its onsite assessment in June 1998, determined that the Nuclear Oversight (NOS) organization had improved in every area evaluated. However, the team noted that the transition from unit restart goals to station operational excellence required additional efforts to reinforce the gains made since 1996, particularly in the area of issue ownership, the emphasis on the overall site responsibility for quality, and the need for improvement in the response to numerous Condition Reports (CRs). These recent JUMA findings resulted in the issuance of four new CRs, covering such broad issues as "expectations, communication, teamwork and trust, and corrective action program implementation," where continued improvements are expected.

NNECO developed a broad-based corrective action program for the deficiencies identified through internal and external assessments of NOS. Among these actions were (1) promulgating corporate expectations for NOS, (2) reorganizing and staffing, (3) developing new hold-point inspection procedures, (4) improving communications between line organizations, NOS, (5) improving the skills of the NOS staff in performance-based assessment, and (6) developing the NOS Restart Verification Plan (NORVP) to assess key issues in the recovery process. The NORVP contained approximately 20 key issues that were tracked by NOS to gauge the performance improvements being made by the line organization.

Since the startup of Millstone Unit 3 in June 1998, the NOS has changed its NORVP assessment process to a Nuclear Oversight Verification Plan (NOVP) format, which incorporates a review of common site programs (e.g., security, emergency planning, and training) along with separate assessments of Millstone Unit 3 operations, Millstone Unit 2 restart readiness, and Millstone Unit 1 maintenance. Recent NOVP reports have identified the need for improvements for some of the key issues affecting each of the three units, as well as the common site programs. The full scope of NOS activities, including the NOVP, appears directed toward focusing Millstone station management attention to the areas impacting Millstone Unit 2 restart readiness

and the achievement of operational excellence for overall station performance.

NRC ACTION:

In February 1998, an NRC team inspection examined the area of NOS, using NRC IP 40500. The inspection covered several areas, including the review of NOS, which implements the NNECO QA program required by 10 CFR Part 50, Appendix B. An understanding of the effectiveness of the licensee's oversight program was obtained through personnel interviews, program evaluations, procedure reviews, and an assessment of the NORVP. The team also examined the TS-required ISEG and the activities of the Nuclear Safety Assessment Board.

In addition to the IP 40500 team inspection, the resident, regional, and contractor inspectors evaluated NOS effectiveness through the routine inspection program and the special inspections associated with the closure of Millstone Unit 3 RAP SIL items.

In April 1998, an NRC OSTI evaluated the readiness of plant hardware and staff and management programs to support a safe restart and continued operation of Millstone Unit 3. For example, the OSTI verified that management programs, such as self-assessments, communications, independent oversight, management review committees, and safety committees, were adequate to support safe operation.

On the basis of the NRC inspections, the staff concluded that oversight and quality assurance were adequate to support the restart of Millstone Unit 3 for the following reasons: (1) the reorganization and the replacement of key managers within NNECO, especially in Nuclear Oversight; (2) the promulgation of improved management expectations; (3) the establishment of open communications between the line organization and NOS and within NOS; (4) the completion of staffing and improved quality and training of the NOS staff; (5) development of a viable inspection and audit program; (6) demonstrated improvements in NOS problem identification and assurance that corrective actions are implemented; (7) improved performance of quality control inspectors; (8) a credible performance by the safety committees; and (9) an effective self-assessment program.

STATUS:

NOS has overseen Millstone Unit 2 through audits and surveillances of plant activities, particularly in the area of readiness for fuel load. NOS is also monitoring the licensee's overall readiness for plant restart. Millstone station is currently undergoing a reorganization. As a result, the Nuclear Oversight and the Regulatory Affairs groups report to a new vice president. The staff will continue to monitor oversight activities to assess the effect of the new organization.

Although the IP 40500 and OSTI inspections focused on Millstone Unit 3, many of the conclusions previously noted apply to Millstone Unit 2 because the oversight program is site-wide. However, the staff will perform both the OSTI and the IP 40500 inspections before Millstone Unit 2 restart to assess the effectiveness of the Nuclear Oversight group at Millstone Unit 2.

ISSUE:

WORK PLANNING AND CONTROLS
DISCUSSION:

Work planning and controls are areas in which the licensee has shown weaknesses in the past. The ability to plan, control, and complete work is an important factor in achieving prompt and effective corrective actions. Additionally, effective work planning and controls are prerequisites for reducing and managing work backlogs.

The NRC staff reviewed the licensee's revised automated work order (AWO) process, which was implemented site-wide in 1997. The AWO process is an integral part of the work planning and control system. It determines the scope of the work, establishes the appropriate procedures, and sets the tagging boundaries. This process is noticeably better than previous processes at Millstone.

NRC ACTION:

The work control process at Millstone Unit 2 is the subject of ongoing routine inspections. In early November, the first integrated and resource-loaded schedule was issued for Millstone Unit 2. In the future, Millstone Unit 2 plans to use a 12-week rotating schedule for the maintenance of plant equipment. However, emergent work has kept the unit from fully implementing the new schedule. Progress has been slow in addressing weaknesses in the work control area due to the large residual Millstone Unit 3 backlog and emergent work from the ongoing Millstone Unit 2 outage.

STATUS:

The staff will perform an OSTI, which will include an in-depth review of the Millstone Unit 2 work control process. This inspection is tentatively scheduled for early 1999.

ISSUE:

PROCEDURE UPGRADE PROGRAM
DISCUSSION:

Quality of and adherence to procedures had been chronic problems at the Millstone site for all three units. The need to improve procedure quality was an element in the Improving Station Performance Program (circa 1995) and the earlier Performance Enhancement Program (circa 1992). In response to NRC concerns, the licensee developed the Procedure Upgrade Program (PUP) in 1992 to improve station procedure quality on a site-wide basis. The licensee's PUP commitment was made in a letter to the NRC dated June 4, 1992, describing its overall Performance Enhancement Program. Because of

the licensee's longstanding commitment to complete the PUP and correct past procedure adherence and quality problems, the satisfactory performance of the licensee's PUP was considered as a separate issue in the NRC RAP.

Although various procedure improvement programs had been ongoing since the late 1980s, the licensee committed to improve procedures to reflect industry standards for format and to standardize procedures at all three units in the PUP. As a result, the station document control administrative procedures were developed to apply to the three units. Recent inspections by the NRC have verified that most of the commitments made in the letter of June 4, 1992, were met.

NRC ACTION:

The licensee has essentially completed the PUP for Millstone Unit 2. The NRC performed a series of inspections of the PUP starting in August 1996, and ending in August 1997. These inspections determined that the licensee had met most of its commitments, particularly in standardizing the format of station procedures and reducing the number of higher tiered procedures.

STATUS:

ICAVP inspections of the technical adequacy of Millstone Unit 2 procedures are ongoing. Millstone Unit 2 has a backlog of procedure changes besides those required by the PUP. These procedure changes were initiated through other processes such as the CMP, procedure performance, biennial reviews, design changes, and TS changes. Because of problems identified in the adequacy of surveillance tests during 1996 and early 1997, NNECO has performed a 100 percent review of Section 4 of the Millstone Unit 2 TS to confirm that all surveillance tests will validate conformance to the TS. This process has been completed and surveillance tests are being revised to correct identified deficiencies. The licensee also reviewed conformance of its surveillances to those required by the Millstone Unit 2 TRM (also discussed in ICAVP section) and the testing required by ASME Code Section XI, "Pumps and Valves." The review of the surveillance tests affecting Modes 5 and 6 is complete and the licensee is taking the appropriate corrective actions. The licensee is still reviewing surveillance tests affecting Modes 1-4.

Procedures will be reviewed for adequacy through the ongoing NRC ICAVP inspection process and routine NRC inspections. The Millstone Unit 2 OSTI will make the final decision on whether the procedures are adequate for restart.

ATTACHMENT 3

MILLSTONE UNIT 2 - LICENSEE'S RESTART MILESTONES AND NRC'S PROJECT PLANNING SCHEDULE

MILLSTONE UNIT 2 - LICENSEE'S RESTART MILESTONES

Milestone	**Date**
Facility 2 Work Complete	12/22/98
Transition to Mode 6	12/31/98
Transition to Mode 5	01/18/99
Facility 1 Work Complete	02/01/99
Engineering Programs Complete	02/05/99
Start to Draw Pressurizer Bubble & Sweep Loops	02/06/99
Non-Facility Work Complete	02/16/99
Physically Ready for Restart	02/18/99
Transition to Mode 4	02/18/99
Transition to Mode 3	02/25/99
RCS at 500 F, P>2000 psi, Start Motor Generator	02/25/99
ICAVP Complete	03/08/99
SILs Complete	03/18/99
Transition to Mode 2	03/24/99
Transition to Mode 1	03/24/99
Synchronize Turbine Generator to Grid	03/24/99

NRC'S PROJECT PLANNING SCHEDULE

Task Name	**Start**	**Finish**

NRC ICAVP Inspections		
- Corrective Actions, Part 1	12/14/98	12/18/98
- Corrective Actions, Part 2	2/1/99	2/12/99
Commission Meeting	TBD	TBD
License Amendments	8/14/98	2/18/99
Ready to Restart (Mode 4) - From Licensee's Schedule	2/18/99	2/18/99
OSTI (Prep/Onsite)	2/8/99	3/5/99
ICAVP Final Report Complete	2/12/99	3/19/99
Inspection Program		
- IP 40500 (Prep/Onsite)	1/11/99	2/5/99
- SIL Review	3/26/98	3/19/99
RAP Review	TBD	TBD
EDO/DIR NRR Briefing	TBD	TBD
Commission Briefing	TBD	TBD

ATTACHMENT 4

MILLSTONE UNIT 3 POST-RESTART PERFORMANCE ASSESSMENT

Overall, the performance of Millstone Unit 3 since its restart in June 1998 has been acceptable; performance is typical of a plant returning to service after a shutdown in excess of 2 years. Several operational events (including a forced outage to repair a leaking valve with maintenance rule impact, two manual reactor trips as a result of secondary water chemistry problems, a manual reactor trip due to reduced condenser vacuum, a number of power reductions to address secondary system equipment problems and several technical specification compliance issues) have caused licensee management to initiate a collective assessment of the number and severity of operational challenges facing the plant staff. The plant operators have responded well to the challenges with evidence of conservative decision-making and deliberate efforts to ensure compliance with procedural requirements. As power activities were conducted for the first time in more than 2 years, the higher standard for procedure compliance resulted in the identification of several procedural issues that were properly addressed by the operators on shift. Shift managers continue to display a questioning attitude regarding planned activities and emergent work.

Historically, there has been evidence that the Millstone Unit 3 Operations staff has tolerated equipment problems and process inefficiencies that have affected their ability to operate the plant. This has resulted in a backlog of operator workarounds and temporary modifications that require licensee attention. Also, two recent Operations Department self-assessments have shown the need for additional plant equipment (nonlicensed) operators and improved processes in staff training, qualification, and work control practices, like tagging and valve manipulation accountability. The newly appointed Millstone Chief Nuclear Officer and the current Vice President of Operations have expressed to the NRC a recognition of the need for increased management attention to this area, particularly relating to the reduction of operator workarounds and other related burdens like control board deficiencies, temporary modifications, and staffing issues. An initial training class for nonlicensed operators is currently in progress and both licensed and nonlicensed operator classes are planned to commence next year to alleviate staffing concerns; also, other initiatives are being explored to improve efficiency on operations/work control issues.

Other work control disciplines, like maintenance and engineering, have been similarly burdened by somewhat cumbersome processes, albeit ones that have improved since the plant shut down in 1996. Maintenance activities coming out of the extended outage have been generally well controlled, with "backlogged" items receiving a thorough review to preclude adverse impact on component or system functionality. The emerging work continues to make it difficult to achieve a major reduction in the overall amount of corrective maintenance, but the number of on-line work orders has recently been lowered below 500 and the volume of probabilistic risk assessment (PRA) risk-significant work has been kept below 350 items, meeting management goals in these areas of backlog management. A 12-week rolling schedule used for equipment outages has not yet attained its full efficiency as a planning tool, but PRA input is being effectively used to prioritize work and evaluate the safety impact of the removal of components for preventive maintenance and other operational configuration management questions. Progress is being made relative to reducing the number of deferred work items; however, the licensee stated during a Restart Assessment Plan meeting on October 27, 1998, that it has approximately 60 additional engineering items which should have been included on the deferred issues list. The staff will review these additional items to determine their safety significance and to decide whether enforcement action is warranted.

To address past configuration management program breakdowns at Millstone, significant efforts have been initiated to improve configuration controls at the work performance and maintenance level. Although this process is not error-free, as evidenced by the licensee's periodic discovery of component and system alignment problems, the low threshold for the self-identification of such problems in condition reports (CRs) reflects a healthy and improving program. Additionally, the audit, surveillance, and quality control activities performed by the Nuclear Oversight group, while increasing the CR totals and corrective action requirements, have been recognized as adding value to worker performance and maintenance effectiveness. Overall, the strength of the Nuclear Oversight organization has been noted to be much improved since the unit shut down and, as a result, the resultant quality assurance activities

have been more effective.

In the area of engineering, some problems in the design change control process (e.g., choice of improper material for service water/hypochlorite isolation valves) has resulted in recent power reductions to effect repairs. This has raised some recurrent NRC concerns regarding the output quality of the plant modification process. Although overall engineering performance has improved, as substantiated by the Independent Corrective Action Verification Program results and resolution of findings, a significant number of existing and emergent engineering issues remain, thus straining the resources for reducing engineering backlog and planning and executing future design modifications. With the next refueling outage scheduled to begin in May 1999, the planning and timing for schedule development and the scope of modification activities have been compressed, affecting the current engineering workload. An NRC IP 40500 corrective action inspection, scheduled for Millstone Unit 3 in the first half of 1999, will review the deferred issues backlog management program at Millstone Unit 3 (this inspection may be included with the Millstone Unit 2 IP 40500, if the timing allows). Such an inspection will supplement the planned NRC engineering program inspection activities, with likely overlap into the areas of design modification controls, overall engineering adequacy, and sustained performance improvements.

The licensee has commenced a reorganization that will effectively reduce the total number of managers from the director level to first-line supervisors by 50 percent. This reorganization will create a "station" versus a "unit" organization structure. This reorganization (the new directors were appointed in early November 1998, and the manager and supervisor selection process will extend several months into 1999) will be a challenge that will require extensive senior management involvement by the licensee over the next several months and will be followed closely by the staff.

Recently, Millstone Station's operator training programs were put on probation for 180 days by the National Academy for Nuclear Training of the Institute for Nuclear Power Operations. This probationary period was determined to be appropriate while Millstone demonstrates sustainability of corrective actions it implemented earlier this year to address several self-identified weaknesses. The Academy's Accrediting Board makes its judgement based on the record of the past 4 years, during which there were some substantive issues that emerged. Since some of the licensee's initiatives are just beginning to show improvement, the Board decided to place the operator training programs in the 180-day probationary period.